

## **REMARKS**

Applicants and the undersigned are most grateful for the time and effort accorded the instant application by the Examiner.

Upon entry of the instant Amendment, Claims 1-4, 6, 9-18, and 21-41 will be all of the claims presently pending before the Examiner. Instantly, independent Claims 1, 40 and 41, along with dependent Claim 4 are amended. In addition, Applicants have amended the Specification and Drawings as provided above and attached hereto.

Applicants respectfully submit that no new matter has been added by the present amendments. Support for the amendments can be found generally throughout the Applicants' disclosure. It should also be noted that this Amendment is not in acquiescence of the Office's position on the allowability of the claims but made merely to expedite prosecution.

The Office is respectfully requested to reconsider the rejections presented in the outstanding Office Action in light of the following remarks.

### **I. Claim Rejections**

#### **A. 35 U.S.C. 102(b)**

Claims 1-4, 6, 9-18, and 21-41 are rejected under 35 U.S.C. 102(b) as being anticipated by Obrecht et al., USPN 6,399,706 (hereinafter "Obrecht"). Applicants disagree for the following reasons and request their withdrawal.

The Office opines that claimed invention is taught by Obrechts' disclosure of a microgel material allowed to swell in toluene (Office Action, Pg. 3, *citing* Col. 3, lines 12-15).

Instantly, the claims have been amended to now provide, *inter alia*, "[s]aid non-crosslinkable organic medium (A) having ... a boiling point of no less than 120°C...." (Independent Claims 1, 40 and 41). As such, the presently claimed non-crosslinkable organic medium cannot include a solvent such as toluene based on its boiling point.

Therefore, Obrecht's teaching of a microgel in toluene fails to anticipate the presently claimed invention, since at the very least, "[a]nticipation requires the disclosure in a single prior art reference of each element of the claim under construction." *W.L. Gore & Associates, Inc. v. Garlock*, 721 F.2d 1540, 1554 (Fed. Cir. 1983).

Furthermore, with regard to independent Claim 1, it is additionally noted that the claim is now, and was previously amended to provide for a deviation between the diameters of an individual primary particle of less than 250% as calculated using Applicant's claimed formula:  $[(d_1 - d_2) / d_2] \times 100\%$  (I), where  $d_1$  and  $d_2$  are each a diameter of the same individual primary particle measured and where  $d_1$  is greater than  $d_2$ .

Currently, the Examiner opines that the deviation of the diameter of an individual primary particle is taught by Obrecht's disclosure, in Example 1, of various average particle diameters of  $d_{10} = 50$  nm,  $d_{50} = 56$  nm, and  $d_{10} = 60$  nm. Such average diameters being used by the Office in Applicants' claimed formula.

However, the Office's calculation is improper because the diameters taught in Obrecht relate to a particle size distribution not to the deviation of the spherical geometry of the same primary particle as provided by Applicants' formula.

Characteristic particle diameters of a particle size distribution are referred to as " $d_{10}$ ", " $d_{50}$ " and " $d_{80}$ ". The meaning of  $d_{10} = 50$ , for example, is that 10 wt. % of the particles have a diameter of up to 50 nm. Respectively  $d_{80} = 60$  nm means that 80 wt. % of particles have a diameter of 60 nm and below. Again, these diameters do not give any information about the ratio of diameters  $d_1$  and  $d_2$  of one single individual primary particle (i.e., the individual particle's geometry). Thus, it is simply not possible to determine the deviation of spherical geometry as presently claimed, using the average particle diameters determined by means of ultra centrifugation as taught in Obrecht and cited by the Office.

In light of the present shortcomings of the cited reference, it is respectfully requested that the present rejections be withdrawn.

B. 35 U.S.C. 102/103

Claim 24 is rejected 35 U.S.C. 102(b) as being allegedly anticipated by, or in the alternative under 35 U.S.C. 103(a) as obvious over, Obrecht et al., USPN 6,399,706 (hereinafter "Obrecht").

Applicants traverse the rejection for the reasons provided above and request its immediate withdrawal.

C. 35 U.S.C. 102/103

Claims 1-4, 6, 12, 14, 16, 18, 21-24, 27-28, 30, 33-37, and 40-41 are rejected under 35 U.S.C. 102(b) as being anticipated by, or in the alternative under 35 U.S.C. 103(a) as obvious over Yamamoto et al., USPN 6,548,454 (hereinafter "Yamamoto"). Applicants respectfully disagree for the reasons to follow.

As best understood, Yamamoto relates to a "rolling apparatus" in which a lubricating composition is employed. The disclosed lubricating composition appears to be "[a] mixture of (1) a thickening agent which is at least one selected from the group consisting of a solid fluoropolymer, a lamellar mineral powder, an ultrafinely particulate organic material, an organic solid lubricant and an ultrafinely particulate inorganic material, and (2) a base oil comprising a liquid fluorinated polymer oil." (Abstract). The "ultrafinely particulate organic material" is said to possess a microgel structure. (Col. 15, Lines 27-30). As taught by Yamamoto, this ultrafinely particulate organic material is mixed with a base oil to form a lubricant composition of the invention. (*E.g.*, Col. 15, Lines 14-17). As indicated above, the base oil of the Yamamoto invention is limited to liquid *fluorinated* polymer oils. (*E.g.*, Abstract; Col. 16, Lines 26-27).

**i) Independent Claim 1 and Claims Depending Therefrom**

Regarding independent Claim 1 and those dependent therefrom, as provided in detail above with respect to Obrecht, Yamamoto likewise clearly fails to disclose or to even suggest a composition comprising microgels having a deviation of a particle's

diameter as claimed. Therefore, a prima facie case of obvious has not been set forth and the present rejections should be withdrawn.

#### ii) Independent Claim 40

Regarding independent Claim 40, the Examiner explains:

Yamamoto et al. also disclose the base oil is a liquid fluorinated polymer oil, such as perfluoropolyether (read on polyether oil), trifluoroethylene telomere and fluorosilicone polymer (read on silicon-containing oil) (column 10, lines 45-57).

(Office Action, Pg. 5, emphasis in original)

Claim 40 is now amended to recite, *inter alia*, "[w]herein the at least one non-crosslinkable organic medium (A) is selected from the group consisting of: hydrocarbons, non-fluorinated polyether oils, ester oils, phosphoric acid esters, non-fluorinated silicon-containing oils, and mixtures thereof..."

In stark contrast to amended Claim 40, Yamamoto fails to teach or suggest a non-fluorinated crosslinkable organic medium. As such, it is respectfully submitted independent Claim 40 is fully distinguishable from the teachings of Yamamoto and in condition for immediate allowance

#### iii) Independent Claim 41

Regarding independent Claim 41, there is now claimed a re-dispersion of a microgel in a non-crosslinkable organic medium. And wherein the individual primary particles of the microgel re-dispersion have an average particle diameter in the re-dispersion composition that is below the average particle diameter of the microgel in the latex in which it was previously dispersed.

As explained in the specification, there is provided in Figure 1 a sample microgel dispersed in water (latex) analyzed to determine its particle size distribution. As shown in Figure 2, the water was driven off the latex so as to dry the microgel, which was then re-dispersed in a non-crosslinkable media (e.g., non-fluorinated polyether polyol) and analyzed to determine its particle size distribution of the microgel in the re-dispersion.

The following Table 1 summarizes the data of the particle diameters distributions of the dispersion and re-dispersion as shown in Figures 1 and 2:

Table 1

particle diameter		in water	in Polyetherpolyol
$d_0$	$\mu\text{m}$	0.0130 = 13 nm	0.0080 = 8 nm
$d_{10}$	$\mu\text{m}$	0.0361 = 36 nm	0.0221 = 22 nm
$d_{20}$	$\mu\text{m}$	0.0385 = 38 nm	0.0244 = 24,4 nm
$d_{30}$	$\mu\text{m}$	0.0401 = 40 nm	0.0262 = 26,2 nm
$d_{40}$	$\mu\text{m}$	0.0414 = 41 nm	0.0277 = 27,7 nm
$d_{50}$	$\mu\text{m}$	0.0426 = 42,6 nm	0.0292 = 29,2 nm
$d_{60}$	$\mu\text{m}$	0.0438 = 43,8 nm	0.0308 = 30,8 nm
$d_{70}$	$\mu\text{m}$	0.0452 = 45,2 nm	0.0326 = 32,4 nm
$d_{80}$	$\mu\text{m}$	0.0468 = 46,8 nm	0.0351 = 35,1 nm
$d_{90}$	$\mu\text{m}$	0.0498 = 49,8 nm	0.0419 = 41,9 nm
$d_{100}$	$\mu\text{m}$	0.1240 = 124 nm	0.1410 = 141 nm
		= OBR1312 B	= TZE 122

Unexpectedly, it can be seen that almost the entire amount of the dried and therefore agglomerated microgel powder was successfully re-dispersed down to the primary particles in the subsequent re-dispersion in non-crosslinkable media. And it can be seen that the particle diameters of the re-dispersed composition even had an average particle diameter distribution that was below that which was shown in the original latex dispersion. As is explained in the Applicants' disclosure, "The division of the microgels in the organic medium down to within the primary particle range is a prerequisite, for example, for rendering the nanoproperties of the microgels usable," and that such dispersability of the microgels, "[s]how[s], surprisingly, properties comparable to those of commercial greases (stability towards settling out, low separation of oil, consistency etc.); [and] more favorable properties in respect of, e.g., shear stability (i.e., almost no change in the penetration values after milling with 60,000 strokes) and exceptionally high drop points such as are otherwise achieved only by heat-resistant greases, such as, e.g., PU greases or Ca complex greases." (Page 3, Lines 3-8 and Lines 14-21).

Such results are neither disclosed nor obvious in light of Yamamoto. In contrast, Yamamoto generally teaches a range of average particle diameters of from 20-1000 nm. As such, Yamamoto clearly teaches away from the usability of smaller particles sizes in a re-dispersion. Yamamoto explains, "If the average particle diameter of the ultrafinely particulate organic material falls below the above defined lower limit, agglomeration of powder particles occurs to produce a secondary particle that causes deteriorated dispersibility when mixed with the base oil and other components to prepare a lubricant composition." (Col. 16, Lines 48-54)

In light of the above, the present rejection should also now be withdrawn.

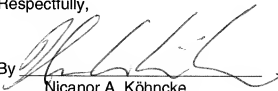
## **II. Conclusion**

In view of the foregoing, it is respectfully submitted that independent Claims 1, 40 and 41 are fully distinguishable over the applied art and are thus in condition for allowance. By virtue of dependence from what is believed to be an allowable independent Claim 1, it is respectfully submitted the remaining dependent claims are also presently allowable. Notice to the effect is earnestly solicited.

If there are any further issues in this application, the Examiner is invited to contact the undersigned at the telephone number listed below.

The USPTO is hereby authorized to charge any fees, including any fees for an extension of time or those under 37 CFR 1.16 or 1.17, which may be required by this paper, and/or to credit any overpayments to Deposit Account No. 50-2527.

Respectfully,

By 

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